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A E R O N A U T I C S

Publications by the Staff of the National Bureau of Standards.

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GENERAL INFORMATION

This Letter Circular is a list of papers on aeronautics and closely related subjects by members of the staff of the National Bureau of Standards. Some of these have appeared in the regular series of the Bureau, others in the publications of the National Advisory Committee for Aeronautics, and still others in scientific and technical journals.

Unless specifically stated, the papers herein listed are not obtainable from the Bureau. Those marked "OP" are out of print, but, in general, may be consulted at the larger technical libraries. Those marked "Restricted" are not available for general distribution. Questions regarding copies should be taken up with the issuing agency.

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The Bureau's publications and those of the National Advisory Committee for Aeronautics are designated by a series letter followed by a number. The meanings of the letters are as follows:

- RP = "Research Paper." These are reprints of articles appearing in the "Journal of Research of the National Bureau of Standards." (Prior to July 1934 this was known as "Bureau of Standards Journal of Research.") When applying at a library, the Journal should be asked for, using the volume number given in the reference.
- S = "Scientific Paper" of the National Bureau of Standards. This series has been superseded by the "Journal of Research."
- T = "Technologic Paper" of the National Bureau of Standards. This series has likewise been superseded by the "Journal of Research."
- C = "Circular" of the National Bureau of Standards.
- CS = "Commercial Standard" of the National Bureau of Standards.
- H = "Handbook" of the National Bureau of Standards.
- M = "Miscellaneous Publication" of the National Bureau of Standards.
- TM = "Technical Memorandum" of the National Advisory Committee for Aeronautics, Washington, D. C. (Mimeographed.)

TN = "Technical Note" of the National Advisory Committee for Aeronautics, Washington, D.C. (Mimeographed.) Unless marked "OP" or "Restricted," these are obtainable without charge from the Committee.

TR = "Technical Report" of the National Advisory Committee for Aeronautics. These reports are published separately and also in the annual volumes of the Committee. These volumes are available for reference in certain technical libraries and in the Office of Aeronautical Intelligence, National Advisory Committee for Aeronautics, Washington, D.C. A table showing the Technical Reports included in each annual volume up to Vol.25 (1939), the last one printed, will be found below. Beginning with TR 683 (June 1, 1940), the distribution of Technical Reports has been placed on a "Restricted" basis.

| Annual volume | Fiscal year | Containing Technical Reports Nos. | Price | Annual volume | Fiscal year | Containing Technical Reports Nos. | Price |
|------------------|----------------|--|-------|------------------|----------------|--|---------|
| 1st | 1915 | 1-7 | OP | 13th | 1927 | 257-282 | OP |
| 2nd | 1916 | 8-12 | OP | 14th | 1928 | 283-308 | \$ 1.25 |
| 3rd | 1917 | 13-23 | OP | 15th | 1929 | 309-336 | 2.35 |
| 4th | 1918 | 24-50 | OP | 16th | 1930 | 337-364 | 3.00 |
| 5th | 1919 | 51-82 | OP | 17th | 1931 | 365-400 | 3.00 |
| 6th | 1920 | 83-110 | OP | 18th | 1932 | 401-440 | 2.50 |
| 7th | 1921 | 111-132 | OP | 19th | 1933 | 441-474 | 2.50 |
| 8th | 1922 | 133-158 | OP | 20th | 1934 | 475-507 | 2.75 |
| 9th | 1923 | 159-185 | OP | 21th | 1935 | 508-541 | 2.75 |
| 10th | 1924 | 186-209 | OP | 22nd | 1936 | 542-576 | 2.50 |
| 11th | 1925 | 210-232 | OP | 23rd | 1937 | 577-611 | OP |
| 12th | 1926 | 233-256 | OP | 24th | 1938 | 612-644 | 2.25 |
| | | | | 25th | 1939 | 645-680 | OP |

In the case of papers in scientific or technical journals, the name of the journal or of the organization publishing the article is given in abbreviated form, with address in parentheses, together with the volume number (underscored), page, and year of publication in the order named. These journals are, in general, available at technical libraries or may be obtained from the publishers direct. The Bureau can not supply copies of these journals, or reprints from them, and it is unable to furnish information as to their availability or price.

AERODYNAMICS

| | <u>Series</u> | <u>Price</u> |
|---|---------------|--------------|
| Air forces on circular cylinders, axes normal to the wind, with special reference to dynamical similarity. H.L. Dryden. Sci. Pap. BS, <u>16</u> , 489 (1920). | S394 | OP |
| Wind pressure on structures. H.L. Dryden and G.C. Hill. Sci. Pap. BS, <u>20</u> , 697 (1926). | S523 | 20c |
| The characteristics of two-blade propeller fans. H.L. Dryden and P.S. Ballif. BS J. Research, <u>5</u> , 185 (1930). | RP193 | 10c |
| Wind pressure on circular cylinders and chimneys. H. L. Dryden and G.C. Hill. BS J. Research, <u>5</u> , 653 (1930). | RP221 | OP |
| Further measurements of propeller fan characteristics. H. L. Dryden and P. S. Ballif. BS J. Research, <u>6</u> 387 (1931). | RP283 | 10c |
| Wind pressure on a model of a mill building. H. L. Dryden and G. C. Hill. BS J. Research, <u>6</u> 735 (1931). | RP301 | 10c |
| Wind pressure on a model of the Empire State Building. H. L. Dryden and G. C. Hill. BS J. Research, <u>10</u> 493 (1933). | RP 545 | 5c |
| Aerodynamic characteristics of automobile models. R. H. Heald. BS J. Research, <u>11</u> 285 (1933). | RP591 | 5c |
| Influence of neighboring structures on the wind pressure on tall buildings. C.L. Harris. BS J. Research, <u>12</u> , 103 (1934). | RP637 | 5c |
| Comparison of the ground-plane and image methods for representing ground effect in tests on vehicle models. R. H. Heald. J. Research NBS, <u>13</u> , 863 (1934). | RP 748 | 5c |
| Air forces and yawing moments for three automobile models. R. H. Heald. J. Research NBS, <u>13</u> , 871 (1934). | RP749 | 5c |
| Effect of humidity in hot-wire anemometry. G. B. Schubauer. J. Research NBS, <u>15</u> , 575 (1935). | RP850 | 5c |
| Performance characteristics of a water current meter in water and in air. G. B. Schubauer and M. A. Mason. J. Research NBS, <u>18</u> , 351 (1937). | RP 981 | 5c |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|--|---------------|--------------|
| Effect of yaw on vane anemometers. R.H. Heald and P. S. Ballif. J. Research NBS, <u>19</u> , 685 (1937). | RP1056 | 10c |
| Aerodynamic characteristics of airfoils at high speeds. L. J. Briggs, G. F. Hull, and H. L. Dryden. (1924). | TR207 | 10c |
| Investigation of turbulence in wind tunnels by a study of the flow about cylinders. H.L. Dryden and R. H. Heald. (1926). | TR231 | OP |
| Pressure distribution over airfoils at high speeds. L. J. Briggs and H. L. Dryden. (1927). | TR255 | 15c |
| Effect of variation of chord and span of ailerons on rolling and yawing moments in level flight. R. H. Heald and D. H. Strother. (1928). | TR298 | 10c |
| Aerodynamic characteristics of twenty-four airfoils at high speeds. L.J. Briggs and H. L. Dryden. (1929). | TR319 | OP |
| The measurement of fluctuations of air speed by the hot wire anemometer. H.L. Dryden and A. M. Kuethe. (1929). | TR320 | OP |
| Effect of turbulence in wind tunnel measurements. H. L. Dryden and A. M. Kuethe. (1930). | TR342 | 10c |
| Effect of variation of chord and span of ailerons in rolling and yawing moments at several angles of pitch. R. H. Heald, D. H. Strother, and B. H. Monish. (1930). | TR343 | OP |
| Aerodynamic characteristics of circular-arc airfoils at high speeds. L. J. Briggs and H. L. Dryden. (1930). | TR365 | 10c |
| Effect of variation of chord and span of ailerons on hinge moments at several angles of pitch. B. H. Monish. (1930). | TR370 | OP |
| Reduction of turbulence in wind tunnels. H. L. Dryden. (1931). | TR392 | 10c |
| The effect of area and aspect ratio on the yawing moments of rudders at large angles of pitch on three fuselages. H. L. Dryden and B. H. Monish. (1932). | TR437 | 5c |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Improved apparatus for the measurement of fluctuations of air speed in turbulent flow. W.J. Mock, Jr. and H. L. Dryden. (1932). | TR448 | OP |
| Computation of the two-dimensional ^{flow} in a laminar boundary layer. H. L. Dryden. (1934). | TR497 | 5c |
| A turbulence indicator utilizing the diffusion of heat. G.B. Schubauer. (1935). | TR524 | 5c |
| Air flow in a separating laminar boundary layer. G. B. Schubauer. (1935). | TR527 | OP |
| The effect of turbulence on the drag of flat plates. G. B. Schubauer and H. L. Dryden. (1936). | TR546 | 5c |
| Air flow in the boundary layer near a plate. H. L. Dryden. (1936). | TR562 | OP |
| Measurements of intensity and scale of wind tunnel turbulence and their relation to the critical Reynolds number of spheres. H. L. Dryden, G.B. Schubauer, W. C. Mock, Jr. and H. K. Skramstad. (1937). | TR581 | 15c |
| Alternating-current equipment for the measurement of fluctuations of air speed in turbulent flow. W. C. Mock, Jr. (1937). | TR598 | 10c |
| Notes on aerodynamic forces on airship hulls. L. B. Tuckerman. (1923). | TN129 | OP |
| Rolling, yawing, and hinge moments produced by rectangular ailerons. R. H. Heald. (1933). | TN441 | OP |
| Effect of aileron displacement on wing characteristics. R. H. Heald. (1933). | TN448 | OP |
| Section on "Aerodynamics". L. J. Briggs and H. L. Dryden. International Critical Tables, 1, 402 (1926) McGraw-Hill Publishing Co. (330 West 42nd St., New York, N.Y.) | | |
| Control of airplanes at low speeds by means of conventional ailerons. Anonymous. Aero Branch, Dept. of Commerce, Aero. Bul.15 (July 1, 1931). | | |

The effect of compressibility on the characteristics of airfoils. L. J. Briggs and H. L. Dryden. Proc. Int. Cong. Applied Mech., Stockholm, Sweden, 1930. (1931).

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Side winds abate performance gains hoped for from streamlining. R. H. Heald. SAE Journal (29 West 39th St., New York, N.Y.), 33, 18 (1933).

Turbulence, companion of Reynolds number. H. L. Dryden. J. Aero. Sciences, (30 Rockefeller Plaza, New York, N.Y.), 1, 67 (1934). (Reprints available on application to The National Bureau of Standards).

Frontiers of aerodynamics. H. L. Dryden. J. Wash. Acad. Sci. (c/o Wm. W. Diehl, Bureau of Plant Industry, Dept. of Agriculture, Washington, D.C.), 25, 101 (1935).

Aerodynamics of cooling. H. L. Dryden. Division T, vol. VI of Aerodynamic Theory, published by J. Springer, Berlin, Germany (1936).

The theory of isotropic turbulence. H. L. Dryden. J. Aero. Sciences, 4, 273 (1937).

Recent developments of the theory of turbulence. H. L. Dryden. J. Applied Mech. (29 West 39th St., New York, N.Y.), 4, A-105 (1937).

Turbulence investigations at the National Bureau of Standards. H. L. Dryden. Proc. Fifth Internatl. Cong. Applied Mech. (c/o J. C. Hunsacker, Mass. Inst. Tech., Cambridge, Mass), (1938).

Turbulence and the boundary layer. H. L. Dryden. J. Aero. Sciences, 6, 85 (1939).

Isotropic turbulence in theory and experiment. H. L. Dryden. Applied Mechanics (Book privately printed by Calif. Inst. Tech., Pasadena, Calif. to commemorate the sixtieth birthday of Theodore von Kármán), 85 (1941).

AIRCRAFT MATERIALS AND CONSTRUCTION - Design and Strength of Structures

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|--|---------------|--------------|
| Investigation of the compressive strength of spruce struts of rectangular cross section and the derivation of formulas suitable for use in airplane design. J. E. Boyd. Tech. Pap. BS, T152 (1920) . | T152 | OP |
| Strength of steel tubing under combined column and transverse loading, including tests of columns and beams. T.W. Greene. Tech. Pap. BS, <u>18</u> , 243 (1924). | T258 | OP |
| An analysis of the deformation of the mooring spindle of the SHENANDOAH. L. B. Tuckerman and C. S. Aitchison. Tech. Pap. BS, <u>18</u> , 609 (1925). | T270 | 10c |
| Design of specimens for short-time "fatigue" tests. L. B. Tuckerman and C. S. Aitchison. Tech. Pap. BS, <u>19</u> , 47 (1924). | T275 | OP |
| Physical properties of electrically welded steel tubing. H. L. Whittemore, J.S. Adelson, and E. O. Seaquist. BS J. Research, <u>4</u> , 475 (1930). | RP161 | OP |
| The relation of torque to tension for thread-locking devices. H. L. Whittemore, G. W. Nusbaum and E. O. Seaquist. BS J. Research, <u>7</u> , 945 (1931). | RP386 | 30c |
| A method of exciting resonant vibrations in mechanical systems. L. B. Tuckerman, H. L. Dryden, and H. B. Brooks. BS J. Research, <u>10</u> , 659 (1933). | RP556 | OP |
| The determination of stresses from strains on three intersecting gage lines and its application to actual tests. W. R. Osgood and R. G. Sturm. BS J. Research, <u>10</u> , 685 (1933). | RP559 | OP |
| A propeller vibration indicator. H. L. Dryden ^{and} L. B. Tuckerman. BS J. Research, <u>12</u> , 537 (1934) | RP 678 | OP |
| Contribution to the design of compression members in aircraft. W. R. Osgood. J. Research NBS, <u>13</u> , 157, (1934). | RP698 | OP |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|---|---------------|--------------|
| Impact and static tensile properties of bolts. H.L. Whittemore, G. W. Nusbaum, and E. O. Seaquist. J. Research NBS, <u>14</u> , 139 (1935). | RP763 | 10c |
| A method for determining stresses in a nonrotating propeller blade vibrating with a natural frequency. W. Ramberg, P. S. Ballif, and M. J. West. J. Research NBS, <u>14</u> , 189 (1935). | RP764 | 5c |
| An extensometer comparator. A.H. Stang and L.R. Sweetman. J. Research NBS, <u>15</u> , 199 (1935). | RP822 | 5c |
| Determination of principal stresses from strains on four intersecting gage lines 45° apart. W.R. Osgood. J. Research NBS, <u>15</u> , 579 (1935). | RP851 | 5c |
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| Calibration of testing machines under dynamic loading. B. Wilson and C. Johnson. J. Research NBS, <u>19</u> , 41 (1937). | RP1009 | OP |
| Graphical computation of stresses from strain data. A.H. Stang and M. Greenspan. J. Research NBS, <u>19</u> , 437 (1937). | RP 1034 | 10c |
| Calculation of stresses and natural frequencies for a rotating propeller blade vibrating flexurally. W. Ramberg and S. Levy. J. Research NBS, <u>21</u> , 639 (1938). | RP1148 | 10c |
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| Relief of residual stress in streamline tie rods. R.E. Pollard and F. M. Reinhart, J. Research NBS, <u>28</u> , 755 (1942). | RP1477 | 10c |
| Screw-thread standards for Federal services. Handb. NBS (1942). | H28 | 35c |
| Gage blanks. Com. Std. NBS (1941). | CS8-41 | 15c |

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| Screw threads and tap-drill sizes Com. Std. NBS (1943). | CS24-43 | In press 10c |
| The strength of one-piece, solid, built-up, and laminated wood airplane wing beams. J. H. Nelson. (1918). | TR35 | OP |
| Parker variable camber wing. H.F. Parker.(1919). | TR77 | OP |
| Inertia factors of ellipsoids for use in air-ship design. L. B. Tuckerman. (1925). | TR210 | OP |
| Water model tests for semirigid airships. L .B. Tuckerman. (1925). | TR211 | OP |
| Strength of welded joints in tubular members for aircraft. H. L. Whittemore and W . C. Brueggeman. (1930). | TR348 | OP |
| Strength of rectangular flat plates under edge compression. L. Schuman and G. Back. (1930). | TR356 | OP |
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| The "pack" method of compression ^{ve} tests of thin specimens of materials used in thin wall structures. C.S. Aitchison and L. B. Tuckerman. (1939). | TR649 | 10c |
| The column strength of two extruded aluminum-alloy H-sections. W. R. Osgood and Holt. (1939). ↑ M. | TR656 | 10c |

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| Mechanical properties of flush-riveted joints. W. C. Brueggeman and F. C. Roop. (1940). | TR701 | Restricted NACA |
| Strength of tubing under combined axial and transverse loading. L. B. Tuckerman, S. N. Petrenko and C. D. Johnson. (1929). | TN307 | OP |
| Fatigue testing of wing beams by the resonance method. W. Bleakney. (1938). | TN660 | OP |
| Experimental study of deformation and of effective width of sheet stringer panels. W. Ramberg, A. E. McPherson and S. Levy, (1939). | TN684 | Free NACA |
| Compressive tests of a monocoque box. W. Ramberg, A. E. McPherson, and S. Levy. | TN721 | Free NACA |
| Extension of pack method for compressive tests. C. S. Aitchison. (1940). | TN789 | Restricted NACA |
| Tensile and pack compressive tests of some sheets of aluminum alloy, 1025 carbon steel, and chromium-nickel steel. C. S. Aitchison, and A. Miller. (1942). | TN840 | Restricted NACA |
| Bending of rectangular plates with large deflections. S. Levy. (1942). | TN846 | Restricted NACA |
| Square plate with clamped edges under normal pressure producing large deflections. S. Levy. (1942). | TN847 | Restricted NACA |
| Normal-pressure tests of circular plates with clamped edges. A. E. McPherson, W. Ramberg and S. Levy. (1942). | TN848 | Restricted NACA |
| Normal-pressure tests of rectangular plates. W. Ramberg, A. E. McPherson and S. Levy. (1942). | TN849 | Restricted NACA |
| Bending with large deflection of a clamped rectangular plate with length-width ratio of 1.5 under normal pressure. S. Levy and S. Greenman. (1942). | TN853 | Restricted NACA |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|---|---------------|--------------------|
| Effect of rivet and spot-weld spacing on the strength of axially-loaded sheet-stringer panels of 24S-T aluminum alloy. S. Levy, A. E. McPherson, and W. Ramberg. (1942). | TN856 | Restricted NACA |
| Test of specimen of wood of longerons of the S.E.5 Airplane after seven years' service. By Bureau of Standards. (1922). | TM129 | OP |
| Report on dirigible design. Eng. News-Record (330 W. 42nd St., New York, N.Y.), <u>89</u> , 1137. (1922). | | |
| Tests of ball bearings for rotating beam fatigue machines. L. B. Tuckerman, and C. S. Aitchison. Am. Machinist (330 W. 42nd St., New York, N. Y.) <u>61</u> , 369. (1924). | | |
| Metal airplane wing patent. H. L. Whittemore. Patent <u>1, 516, 480</u> . (1924). Patent Office, Dept. of Commerce, Washington, D. C. 10c | | |
| The investigation of welded joints for aircraft by the Bureau of Standards. I. W. Gaston. Aviation Eng. (Lyon Block, Albany. N.Y.), <u>1</u> , 9 (1928). | | |
| Testing joints for aircraft structures welded under procedure specifications. H. L. Whittemore. J. Am. Welding Soc. (33 W. 39th St., New York, N.Y.), <u>7</u> , 31 (1928). | | |
| Testing welded joints for aircraft structures. H. L. Whittemore. Airway Age (34 N. Crystal St., E. Stroudsburg, Pa.), <u>10</u> , 161. (1929). | | |
| Physical properties of electrically welded steel tubing. H. L. Whittemore, J. S. Adelson, E. O. Seaquist. J. Am. Welding Soc., <u>2</u> , 17. (1930). | | |
| Strength of welded joints in tubular members for aircraft. H. L. Whittemore and W. C. Brueggeman. J. Am. Welding Soc., <u>2</u> , 107. (1930). | | |
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| Tests of cellular sheet-steel flooring. H. L. Whittemore and J. M. Frankland. J. Am. Welding Soc., <u>12</u> , 4 (1933). | | |

From material to structure. L. B. Tuckerman. J. Wash. Acad. Sci. (c/o Wm. W. Diehl, Bureau of Plant Industry, Dept. of Agriculture, Washington, D. C.), 23, 5 (May 15, 1933).

The double modulus theory of column action. W. R. Osgood. Civil Engineering (33 West 39th St., New York, N. Y.), 5, 173 (1935).

An interesting case of submultiple resonance. L. B. Tuckerman, and W. Ramberg. Phys. Rev. (11 East 38th St., New York, N. Y.), 49, 862 (1936).

Speed control for screw-power testing machines driven by direct current motors. A. H. Stang, and (R. L.) Sweetman. ASTM Bul. 87, (Amer. Soc. Test. Mtrls., 260 S. Broad St., Philadelphia, Pa.), 15 (August, 1937).

Note on plane strain. W. R. Osgood. J. Applied Mechanics (29 West 39th St., New York, N. Y.), 9, A-26 (1942).

Proposed method of verification and classification of strain-ometers. B.L. Wilson. ASTM Bul. 117, 83 (1942).

AIRCRAFT MATERIALS AND CONSTRUCTION - Metals

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|--|---------------|--------------|
| Constitution and metallography of aluminum and its light alloys with copper and with magnesium. P. D. Merica, R. G. Waltenberg, and J. R. Freeman, Jr. Sci. Pap. BS, <u>15</u> , 105 (1919). | S337 | OP |
| The heat treatment of duralumin. P. D. Merica, R. G. Waltenberg, and H. Scott. Sci. Pap. BS, <u>15</u> , 271 (1919). | S347 | OP |
| Thermal expansion of nickel, monel metal, stellite, stainless steel, and aluminum. W. H. Souder and P. Hidnert. Sci. Pap. BS, <u>17</u> , 497 (1922). | S426 | 10c |
| Thermal expansion of aluminum and various important aluminum alloys. P. Hidnert. Sci. Pap. BS, <u>19</u> , 697 (1925). | S497 | OP |

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|--|---------------|--------------|
| Thermal expansion of beryllium and aluminum-beryllium alloys. P. Hidnert, and W. T. Sweeney. Sci. Pap. BS, <u>22</u> , 533 (1927). | S565 | 10c |
| Some tests of light aluminum casting alloys-The effect of heat treatment. P. D. Merica, and C. P. Karr. Tech. Pap. BS, T139 (1919). | T139 | OP |
| Electrodeposition of chromium from ^{chromic} acid baths. H. E. Haring, and W. P. Barrows. Tech. Pap. BS, <u>21</u> , 413 (1927). | T346 | 15c |
| Thermal expansion of magnesium and some of its alloys. P. Hidnert, and W. T. Sweeney. BS J. Research, <u>1</u> , 771 (1928). | RP29 | OP |
| Thermal expansion of copper-beryllium alloys. P. Hidnert. J. Research NBS, <u>16</u> , 529 (1936). | RP890 | 5c |
| Deterioration of chromic acid baths used for anodic oxidation of aluminum alloys. R. W. Buzzard, and J. H. Wilson. J. Research NBS, <u>18</u> , 53 (1937). | RP961 | OP |
| Anodic coating of magnesium alloys. R. W. Buzzard, and J. H. Wilson. J. Research NBS, <u>18</u> , 83 (1937). | RP964 | 5c |
| Anodizing of aluminum alloys in chromic acid solutions of different concentrations. R. W. Buzzard. J. Research NBS, <u>18</u> , 251 (1937). | RP975 | 5c |
| Outdoor exposure tests of electroplated nickel and chromium coatings on steel and nonferrous metals. W. Blum, and P. W. C. Strausser. J. Research NBS, <u>24</u> , 443 (1940). | RP1293 | 5c |
| Corrosion of metals used in aircraft. W. Mutchler. J. Research NBS, <u>25</u> , 75 (1940). | RP1316 | 10c |
| Effect of low temperatures on the properties of aircraft metals. S. J. Rosenberg. J. Research NBS, <u>25</u> , 673 (1940). | RP1347 | 10c |

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|--|---------------|--------------------|
| The tee-bend test to compare the welding quality of steels. G. A. Ellinger, A. G. Bissell, and M. L. Williams. J. Research NBS, <u>28</u> , 1 (1942). | RP1444 | 30c |
| Solders for aluminum. Cir. BS (1923). | C78 | OP |
| The structure and related properties of metals. Cir. BS. (1922). | C113 | OP |
| Light metals and alloys; aluminum; magnesium. Cir. BS. (1927). | C346 | OP |
| Aluminum and its light alloys. P.D. Merica. (1918) | TR34 | OP |
| The weathering of sheet aluminum alloys used in aircraft. W. H. Mutchler. (1934). | TR490 | OP |
| Effect of service stresses on impact resistance, X-ray diffraction patterns, and microstructure of 25-S aluminum alloy. J. A. Kies, and G. W. Quick. (1939). | TR659 | 10c |
| The weathering of light-metal alloys used in aircraft. W. H. Mutchler. (1939). | TR663 | 15c |
| Tensile-elastic properties of 18:8 chromium-nickel steel as affected by plastic deformation. D. J. McAdam, and R. W. Mebs. (1939). | TR670 | 15c |
| Tensile elastic properties of typical stainless steels and non-ferrous metals as affected by plastic deformation and by heat treatment. D. J. McAdam, Jr., and R. W. Mebs. (1940). | TR696 | Restricted NACA |
| Corrosion embrittlement of duralumin. I. Practical aspects of the problem. H. S. Rawdon. (1928). | TN282 | OP |
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| Corrosion embrittlement of duralumin. III. Effect of the previous treatment of sheet materials on the susceptibility to this type of corrosion. H. S. Rawdon. (1928). | TN284 | OP |

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| Corrosion embrittlement of duralumin. IV. The use of protective coatings. H. S. Rawdon. (1928). | TN285 | Free NACA |
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| Methods for the identification of aircraft tubing of plain steel and chromium molybdenum steel. W. H. Mutchler, and R. W. Buzzard. (1930). | TN350 | Free NACA |
| Advantages of oxide films as bases for aluminum-pigmented surface coatings for aluminum alloys. R. W. Buzzard, and W. H. Mutchler. (1931). | TN400 | Free NACA |
| Rapid chemical test for the identification of chromium-molybdenum steel aircraft tubing. J. C. Redmond. (1932). | TN411 | Free NACA |
| Mechanical properties of aluminum-alloy rivets. W. C. Brueggeman. (1936). | TN585 | Free NACA |
| Tensile-elastic properties of typical stainless steels and nonferrous metals. D. J. McAdam, and R. W. Mebs. (1941). | TN696 | Free NACA |
| Tide water and weather exposure tests of metals used in aircraft. W. H. Mutchler, and W. G. Glavin. (1939). | TN736 | Free NACA |
| Effect of aging on mechanical properties of aluminum-alloy rivets. F. C. Roop. (1941). | TN805 | Restricted NACA |
| Tensile-elastic properties at low temperatures of 18:8 chromium-nickel steel, as affected by heat treatment and by slight plastic extension. R. W. Mebs, and D. J. McAdam, Jr. (1941). | TN818 | Restricted NACA |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Relief of residual stress in streamline tierods by heat treatment. R. E. Pollard, and F. M. Reinhart. (1941). | TN832 | Restricted NACA |
| ^d Tiele water and weather-exposure tests of metals used in aircraft. II. W. H. Mutchler, and W. G. Galvin, (1942). | TN842 | Restricted NACA |
| Recent development in light alloys. R. W. Woodward. (1920). | TM3 | OP |
| Discussion on tests of thin gage metals. H. L. Whittemore. Proc. Am. Soc. Test. Mtrls. (260 So. Broad St., Philadelphia, Pa.), <u>24</u> , 1006 (1924). | | |
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| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Study of transparent plastics for use on aircraft. B. M. Axilrod, and G. M. Kline. J. Research NBS, <u>19</u> , 367 (1937). | RP1030 RP1031 | OP |
| Suitability of various plastics for use in air-plane dopes. G. M. Kline, and C. G. Malmberg. J. Research NBS, <u>20</u> , 651 (1938). | RP1098 | 10c |
| Organic plastics. G. M. Kline. Cir. NBS (1936). | C411 | 5c |
| Plastics as structural materials for aircraft. G. M. Kline. (1937). | TN628 | Free NACA |
| Resistance of transparent plastics to impact. B. M. Axilrod, and G. M. Kline. (1939). | TN718 | Free NACA |
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| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|---|---------------|--------------|
| Permeability of rubber to gases. J. D. Edwards. and S. F. Pickering. Sci. Pap. BS, <u>16</u> , 327 (1920). | S387 | OP |
| Determination of permeability of balloon fabrics. J. D. Edwards. Tech. Pap. BS, T113 (1918). | T113 | OP |
| A portable instrument for measuring air permeability of fabrics. H. F. Schiefer, and A. S. Best. BS J. Research, <u>6</u> , 51 (1931). | RP261 | 10c |
| Effect of weave on the properties of cloth. H. F. Schiefer, R. S. Cleveland, J. W. Porter, and J. Miller. BS J. Research, <u>11</u> , 441 (1933). Textile Weekly (49 Deansgate, Manchester 3, England), <u>12</u> , 498 and 524 (1934). | RP600 | OP |
| A sensitive instrument for measuring the air permeability of paper and other sheet materials. F. T. Carson. BS J. Research, <u>12</u> , 567 (1934). | RP681 | OP |
| Permeability of synthetic film-forming materials to hydrogen. T.P. Sager. J. Research NBS, <u>13</u> , 879 (1934). | RP750 | OP |
| Moisture relations of aircraft fabrics. G. M. Kline. J. Research NBS, <u>14</u> , 67 (1935). | RP758 | 5c |

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| Effect of protective coatings on the absorption of moisture by gelatin-latex gas-cell fabrics. D. F. Houston. J. Research NBS, <u>15</u> , 163 (1935). | RP818 | 5c |
| Effect of number of warp and filling yarns per inch and some other elements of construction on the properties of cloth. H. F. Schiefer, D. H. Taft, and J. W. Porter. J. Research NBS, <u>16</u> , 139 (1936). | RP862 | OP |
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| Permeability of neoprene to gases. T. P. Sager, and M. Sucher. J. Research NBS, <u>22</u> , 71 (1939). | RP1166 | 5c |
| Permeability of elastic polymers to hydrogen. T. P. Sager. J. Research NBS, <u>25</u> , 309 (1940). | RP1327 | 5c |
| Improved instrument for measuring the air permeability of fabrics. H. F. Schiefer, and P. M. Boyland. J. Research NBS, <u>28</u> , 637 (1942). | RP1471 | 10c |
| Fabrics for aeronautic construction. Part 1. Cotton airplane fabrics. E. D. Walen. (1917). Part 2. Balloon fabrics. Bureau of Standards Balloon Fabrics Committee. (1917). | TR22 | OP |
| The structure of airplane fabrics. E. D. Walen. (1918). | TR36 | OP |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Fabric fastenings. E. D. Walen, and R. T. Fisher. (1918). | TR37 | OP |
| Airplane dopes and doping. W. H. Smith. (1918). | TR38 | OP |
| The testing of balloon fabrics. J. D. Edwards, and I. L. Moore. (1918). Part 1. Characteristic exposure tests of balloon fabrics. Part 2. Use of ultraviolet light for testing balloon fabrics. | TR39 | OP |
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| An investigation of cotton for parachute cloth. W. D. Appel and R. K. Worner. (1931). | TN393 | Free NACA |
| Mercerization of cotton for strength with special reference to aircraft cloth. J. B. Wilkie. (1933). | TN450 | Free NACA |
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|--|---------------|--------------|
| Emissive tests of paints for decreasing or increasing heat radiation from surfaces. W. W. Coblentz and C. W. Hughes. Tech. Pap. BS, <u>18</u> , 171 (1924-25). | T254 | OP |
| Soundproofing of airplane cabins. V. L. Chrysler and W. F. Snyder. BS J. Research, <u>2</u> , 897 (1929). | RP63 | OP |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Physical Properties of materials. I. Strengths and related properties of metals and wood (with list of refernces). Cir. BS (1924). | C101 | 40c |
| Supplement to above circular.(1937). | C101 Supplement | 5c |
| Synthetic rubbers - a review of their compositions, properties, and uses. L. A. Wood. Cir. NBS (1940). | C427 | 10c |
| Safe handling of radioactive luminous compound. Handb. NBS (1941). | H27 | 10c |
| Self-luminous materials. N. E. Dorsey. (1918). | TR33 | OP |
| Impact tests for woods. Anonymous. (1922). | TR78 | OP |
| Principles, practices, and progress of noise reduction in airplanes. A. London. (1940). | TN748 | Free NACA |
| Silencing the airplane. H. L. Dryden. Paper before fourth National Aeronautical Meeting, Am. Soc. Mech. Eng. (29 West 39th St., New York, N. Y.), (May, 1930). | | |
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| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Correcting engine tests for humidity. D. B. Brooks. BS J. Research, <u>3</u> , 795 (1929). | RP118 | 10c |
| Some factors influencing the performance of diaphragm indicators of explosion pressures. F. R. Caldwell and E. F. Flock. J. Research NBS, <u>26</u> , 175 (1941). | RP1368 | 15c |
| Effect of altitude on knock rating in CFR engines. D. B. Brooks. J. Research NBS, <u>28</u> , 713 (1942). | RP1475 | 10c |
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| The effect of humidity on engine power at altitude. D. B. Brooks and E. A. Garlock. (1932). | TR426 | OP |
| A variable speed fan dynamometer. K. D. Wood. (1920). | TN26 | OP |
| Instrument for measuring engine clearance volumes. S. W. Sparrow. (1920). | TN27 | OP |
| The testing of aviation engines under approximate altitude conditions. R. W. DuBois. (1924). | TN210 | OP |
| Correcting engine tests for humidity. D. B. Brooks. (1929). | TN309 | OP |
| The effect on engine performance of change in jacket-water outlet temperature. E. A. Garlock and G. Ellis (1933). | TN476 | OP |
| Flying an airplane engine in the ground. S. W. Sparrow. SAE Journal (29 W. 39th St., New York, N. Y.), <u>6</u> , 239 (1920). | | |
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AERONAUTIC POWER PLANTS - Ignition Systems

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| Thermal expansion of (electrical) insulating materials. W. H. Souder and P. Hidnert. Sci. Pap. BS, <u>15</u> , 387 (1919-20). | S352 | 10c |
| Mathematical theory of induced voltage in the high-tension magneto. F. B. Silsbee. Sci. Pap. BS, <u>17</u> , 407 (1921). | S424 | 15c |
| A study of deterioration of nickel spark-plug electrodes in service. H. S. Rawdon and A. I. Krynitsky. Tech. Pap. BS, T143 (1920). | T143 | 10c |
| Cements for spark-plug electrodes. H. F. Staley. Tech. Pap. BS, T155 (1920). | T155 | OP |
| Electrical character of the spark discharge of automotive ignition systems. M. F. Peters, G. F. Blackburn, and P. T. Hannen. J. Research NBS, <u>19</u> , 401 (1937). | RP1032 | 10c |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Determination of optimum voltage for airplane electric systems. V. H. Grant and M. F. Peters. J. Research NBS, <u>23</u> , 485 (1939). | RP1247 | 5c |
| Note on the effects of cobalt and tungsten in storage batteries. G. W. Vinal, D. N. Craig and C. L. Snyder. J. Research NBS, <u>25</u> , 417 (1940). | RP1335 | 5c |
| Aeronautic power-plant investigations. By the subcommittee on power plants. H. C. Dickinson. (1917) Part 3. Spark plugs. | TR23 | OP |
| Spark plug defects and tests. (1919). Part 1. Causes of failure of spark plugs. F. B. Silsbee. Part 2. Gas leakage in spark plugs. L. B. Loeb, L. G. Sawyer and E. L. Fonseca. Part 3. Methods for testing spark plugs. H. C. Dickinson, F. B. Silsbee, and P. G. Agnew. | TR51 | OP |
| Temperatures in spark plugs having steel and brass shells. C. S. Cragoe. (1929) 1919 | TR52 | OP |
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| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Characteristics of high-tension magnetos. F. B. Silsbee. (1919). Part 1. Cycle of operation of jump-spark ignition systems. Part 2. Transformation ratio and coupling in high-tension magnetos. | TR58 | OP |
| Simplified theory of the magneto. F. B. Silsbee. (1921). | TR123 | OP |
| The effect of electrode temperature on the sparking voltage of short spark gaps. F. B. Silsbee. (1923). | TR179 | OP |
| Flame speed and spark intensity. D. W. Randolph and F. B. Silsbee. (1924). | TR187 | OP |
| The sparking voltage of spark plugs. F. B. Silsbee. (1924). | TR202 | OP |
| Electrical characteristics of spark generators for automotive ignition. R. B. Brode, D. W. Randolph, and F. B. Silsbee. (1926). | TR241 | OP |
| An investigation of the effectiveness of ignition sparks. M. F. Peters, W. L. Summerville, and M. Davis. (1930). | TR359 | 10c |
| The automotive ignition coil. T. H. Darnell. Note by F. B. Silsbee. (1931). | TR374 | 25c |
| Causes of cracking of ignition cable. F. B. Silsbee. (1921). | TN32 | OP |
| Deterioration of nickel spark plug terminals in service. H. S. Rawdon and A. I. Krynitsky. Bul. 152, Am. Inst. Mining & Metallurgical Engineers (29 W. 39th St., New York, N. Y.) (1919). | | |
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| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Radiators for aircraft engines. S. R. Parsons and D. R. Harper 3d. Tech. Pap. BS, <u>16</u> , 431 (1922). | T211 | 50c |
| A hot-wire anemometer for measuring air flow through engine radiators. C. G. F. Zobel and L. B. Carroll. Tech. Pap. BS, <u>19</u> , 287 (1925). | T287 | OP |
| Condensation of water from engine exhaust for airship ballasting. R. F. Kohr. Tech. Pap. BS, <u>19</u> , 537. (1925). | T293 | OP |
| Aeronautic power-plant investigations. By the subcommittee on power plants. H. C. Dickinson. (1917). Part 2. Radiator design. | TR23 | OP |
| Synopsis of aeronautic radiator investigations for the years 1917 and 1918. R. V. Kleinschmidt. (1918). | TR43 | OP |
| General analysis of airplane radiator problems. H. C. Dickinson, W. S. James, and R. V. Kleinschmidt. (1919). | TR59 | OP |
| General discussion of test methods for radiators. H. C. Dickinson, W. S. James, and W. P. Brown. (1919). | TR60 | OP |
| Head resistance due to radiators. (1919). Part 1. Head resistance of radiator cores. R. V. Kleinschmidt, and S. R. Parsons. Part 2. Preliminary report on resistance due to nose radiator. R. V. Kleinschmidt. Part 3. Effect of streamline casing for free-air radiators. (R. S.) Parsons. | TR61 | OP |
| Effect of altitude on radiator performance. W. S. James and S. R. Parsons. (1919). | TR62 | OP |
| Results of tests on radiators for aircraft engines. (1919). Part 1. Heat dissipation of radiators. H. C. Dickinson, W. S. James, and R. V. Kleinschmidt. Part 2. Water flow through radiator cores. W. S. James. | TR63 | OP |
| Properties of special types of radiators. S. R. Parsons. (1920). | TR86 | OP |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| Effects of nature of cooling surface on radiator performance. R. V. Kleinschmidt and S. R. Parsons. (1920). | TR87 | OP |
| Pressure drop in radiator air tubes. S. R. Parsons. (1920). | TR88 | OP |
| Turbulence in the air tubes of radiators for aircraft engines. S. W. Sparrow. (1920). | TR106 | OP |
| Mathematical equations for heat conduction in the fins of air-cooled engines. D. R. Harper and W. B. Brown. (1922). | TR158 | OP |
| The design of cooling surface for air-cooled engines. W. B. Brown. Automotive Industries. (56th & Chestnut Sts., Philadelphia, Pa.), <u>42</u> , 1352 (1920). | | |
| Design factors for airplane radiators. S. R. Parsons. SAE Journal (29 W. 39th St., New York, N. Y.), <u>6</u> , 437 (1920). | | |
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AERONAUTIC POWER PLANTS - Fuels and Lubricants

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|--|---------------|--------------|
| Equilibrium volatility of motor fuels from the standpoint of their use in internal combustion engines. O. C. Bridgeman. J. Research NBS, <u>13</u> , 53 (1934). | RP694 | OP |
| Paraffin hydrocarbons isolated from crude synthetic isooctane (2,2,4-trimethylpentane). D. B. Brooks, R. B. Cleaton and F. R. Carter. J. Research NBS, <u>19</u> , 319 (1937). | RP1027 | 5c |
| The carbonization of lubricating oils. Cir. BS. C99 (1920). | C99 | OP |
| Thermal properties of petroleum products. C. S. Cragoe. Misc. Pub. BS, M97 (1929). | M97 | 15c |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|---|---------------|--------------|
| Power characteristics of fuels for aircraft engines. (1918). Part 1. Power characteristics of aviation gasoline. E. W. Roberts. Part 2. Power characteristics of Sumatra and Borneo gasolines. E. W. Roberts. Part 3. Power characteristics of 20 per cent benzol mixtures. E. W. Roberts. | TR47 | OP |
| Carbureting conditions characteristic of aircraft engines. P. S. Tice. (1918). | TR48 | OP |
| Metering characteristics of carbureters. P. S. Tice. (1918). | TR49 | OP |
| Comparison of Aleogas aviation fuel with export aviation gasoline. V. R. Gage, S. W. Sparrow, and D. R. Harper. (1920). | TR89 | OP |
| Comparison of Hector fuel with export aviation gasoline. H. C. Dickinson, V. R. Gage, and S. W. Sparrow. (1920). | TR90 | OP |
| A constant-pressure bomb. F. W. Stevens. (1923). | TR176 | OP |
| Fuels for high-compression engines. S. W. Sparrow. (1925). | TR232 | OP |
| The gaseous explosive reaction - - The effect of inert gases. F. W. Stevens. (1927). | TR280 | OP |
| The gaseous explosive reaction - - A study of the kinetics of composite fuels. F. W. Stevens. (1928). | TR305 | 15c |
| The gaseous explosive reaction ^{at} of constant pressure - - The reaction order and reaction rate. F. W. Stevens. (1930). | TR337 | 10c |
| The gaseous explosive reaction - - The effect of pressure on the rate of propagation of the reaction zone and upon the rate of molecular transformation. F. W. Stevens. (1931). | TR372 | OP |
| Flame movement and pressure development in an engine cylinder. G. F. Marvin, Jr. and R. D. Best. (1931). | TR399 | OP |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| The mechanism of atomization accompanying solid injection. R. A. Castleman, Jr. (1932). | TR440 | 5c |
| Infrared radiation from explosions in a spark-ignition engine. C. F. Marvin, Jr., F. R. Caldwell, and S. Steele. (1934). | TR486 | OP |
| The effect of water vapor on flame velocity in equivalent CO-O ₂ mixtures. E. F. Flock and H. K. King. (1935). | TR531 | 5c |
| The soap-bubble method of studying the combustion of mixtures of CO and O ₂ . E. F. Flock and C. H. Roeder. (1935). | TR532 | 5c |
| Some effects of argon and helium upon explosions of carbon monoxide and oxygen. E. F. Flock and C. H. Roeder. (1936). | TR553 | 10c |
| Further studies of flame movement and pressure development in an engine cylinder. C. F. Marvin, Jr., A. Wharton, and C. H. Roeder. (1936). | TR556 | OP |
| Flame speeds and energy considerations for explosions in a spherical bomb. E. F. Flock, C. F. Marvin, Jr., F. R. Caldwell, and C. H. Roeder. (1940). | TR682 | 10c |
| Increase in maximum pressures produced by pre-ignition in internal combustion engines. S. W. Sparrow. (1920). | TN14 | OP |
| High thermal efficiency in airplane service. S. W. Sparrow. (1920). | TN39 | OP |
| The background of detonation. S. W. Sparrow. (1922). | TN93 | OP |
| Comparing maximum pressure in internal combustion engines. S. W. Sparrow and S. M. Lee. (1922). | TN101 | OP |
| The resistance to the steady motion of small spheres in fluids. R.A. Castleman. (1926). | TN231 | OP |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|---|---------------|--------------|
| The gaseous explosive reaction at constant pressure - - Further data on the effect of inert gases. F. W. Stevens. (1932). | TN438 | Free NACA |
| The velocity of flame propagation in engine cylinders. D. MacKenzie and R. K. Honoman. SAE Journal (29 W. 39th St., New York, N. Y.), <u>6</u> , 119 (1920). | | |
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Appendix II. - Report of comparative tests of 50 octane fuels of several types. R. F. Gagg and W. L. Losson. (p. 198).

Appendix III. - Detonation tests on aviation fuels. H. K. Cummings and D. B. Brooks. (p. 200).

Appendix IV. - Recommendation covering use of CFR motor method for determining anti-knock characteristics of aviation gasoline. (Committee) (p. 204).

Appendix V. - Suggested engine test procedure. (Committee) (p. 204)

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| Aeronautic instruments. F. L. Hunt. Tech. Pap. BS, <u>17</u> , 447 (1922-1924). | T237 | OP |
| A new electrical telemeter. B. McCollum and O. S. Peters. Tech Pap. BS, <u>17</u> , 737 (1922-1924). | T247 | OP |

| <u>Title</u> | <u>Series</u> | <u>Price</u> |
|---|---------------|--------------|
| A hot-wire anemometer for measuring air flow through engine radiators. C. G. F. Zobel and L. B. Carroll. Tech. Pap. BS, <u>19</u> , 287 (1925). | T287 | OP |
| A fabric tension meter for use on aircraft. L. B. Tuckerman, G. H. Keulegan and H. N. Eaton. Tech. Pap. BS, <u>20</u> , 581 (1925-1926). | T320 | 10c |
| Statical hysteresis in the flexure of bars. G. H. Keulegan. Tech. Pap. BS, <u>21</u> , 145 (1926-1927). | T332 | 10c |
| A superheat meter or differential thermometer for airships. D. H. Strother and H. N. Eaton. Tech. Pap. BS, <u>22</u> , 171 (1927-1928). | T359 | OP |
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| <u>Title</u> | <u>Series</u> | <u>Price</u> |
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| The altitude effect on air speed indicators. M. D. Hersey, F. L. Hunt, and H. N. Eaton. (1921). | TR110 | OP |
| General classification of instruments and problems, including bibliography. M. D. Hersey. (1922). | TR125 | OP |
| Altitude instruments . (1922). Part 1. Altimeters and barographs. A. H. Mears, H. B. Henrickson, and W. G. Brombacher. Part 2. Precision altimeter design. J. B. Peterson, and J. R. Freeman, Jr. Part 3. Statoscopes and rate-of-climb indicators. A. M. Mears. Part 4. Aerographs and strut thermometers. J. A. C. Warner. | TR126 | OP |
| Aircraft speed instruments. (1922). Part 1. Air-speed indicators. F. L. Hunt. Part 2. Testing of air-speed meters. H. C. Stearns. Part 3. Principles of ground speed measurement. F. L. Hunt. | TR127 | OP |
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| Aircraft speed instruments. K. H. Beij. (1932). | TR420 | OP |

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| Aircraft power-plant instruments. H. Sontag and W. G. Brombacher. (1933). | TR466 | 20c |
| Altitude-pressure tables based on the United States standard atmosphere. W. G. Brombacher. (1935). | TR538 | 5c |
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| Effect of aging on taut rubber diaphragms. D. H. Strother and H. B. Henrickson. (1932). | TN409 | Free NACA |
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| Gyroscopic instruments for instrument flying. W. G. Brombacher and W. C. Trent. (1938). | TN662 | Free NACA |
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